12 Selecting, adapting and creating CLIL materials

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Objectives
Each CLIL teacher needs to create CLIL materials because of the lack of these materials on the market. The objective of this chapter is to clarify which objectives need to be met in CLIL materials, and which principles should be incorporated in them. We will also focus on the role of language in CLIL lessons, and particularly on the stages which help learners formulate their preconcepts, construct their new knowledge, and develop not only their subject-specific knowledge but also their cognitive, meta-cognitive and communication skills.

Introduction
Recently, CLIL has been very successful in Slovakia, and the number of schools implementing CLIL has been increasing. There is evidence that the level of language skills CLIL students achieve is higher than that of their counterparts, and moreover, they also achieve very good results in subjects which they study in L2. However, it is necessary to realize that “embracing the CLIL approach does not automatically lead to successful teaching and learning. To truly realize the added value of CLIL teachers need to embrace a new paradigm of teaching and learning and they need tools and templates that help them plan their lessons and create/adapt materials” (Meyer, 2010, p. 13).

Despite the popularity of CLIL, CLIL teachers need to face many difficulties because there are not enough CLIL materials to teach from, or methodological resources which would broaden teachers’ skills in creating CLIL materials and their understanding of integrating content and language in CLIL lessons.

Creating CLIL materials using the 4Cs framework
Many researchers and theoreticians agree that the construction of CLIL materials should be based on Coyle’s 4Cs Framework (Coyle, Hood & Marsh, 2010, p. 53-65), more information here.

The abbreviation 4Cs stands for content, cognition, communication and culture, and all these components should be integrated in CLIL lessons. Learning in CLIL should be personalized and students should have enough space to construct their own knowledge and understanding of the subject matter (content). In this process they develop not only their lower-order thinking skills (remember, understand, apply) but particularly their higher-order thinking skills (analyse, evaluate, create), as well as their metacognitive skills which help them gain more insight into their own learning (cognition). Therefore, it is important that the new knowledge is not transferred to them, but they are given many opportunities to construct it independently from the teacher. In order to achieve this objective, it is essential that students are scaffolded in understanding the subject matter and the language used in the materials, as well as in verbalizing subject-specific issues using their own interpretation.

Materials adjusted to students need to help them achieve communication objectives, which in CLIL context means that students become able to understand (listen and read) and produce (speak and write) texts of various length on subject-specific topics; in other words they acquire the academic language. The teacher should not be the only source of information for students; they should be given sufficient space to gain information from various materials independently from the teacher. Thanks to rich input in both L1 and L2 (e.g. different kinds of texts, videos, DVD materials, animations, web-quests, pod-casts, graphic organizers, maps, etc.) which students process independently from the teacher, they become aware of a variety of academic functions which native speakers use in order to express meanings in academic contexts. However, teachers usually need to draw students’ attention to these functions to enhance students’ awareness.
In addition to being able to work with the input independently, students should also be given sufficient space to use the language in various interactive tasks so that they can proceduralize their explicit language knowledge and develop both their speaking and writing skills. From this point of view, it is fundamental that students interact with each other because learning is a social process and learners learn best in interaction with each other. Such interaction enables them to construct their own knowledge, develop their cognition and acquire speaking skills (in both languages).

In order for learning to be meaningful, students need to meet cultural objectives as well. When talking about culture in CLIL settings, we don’t only mean arts, customs, festivals, national food, etc. but we talk about culture in a wider sense of word. We also mean meanings and values people accept in various surroundings in which they use a language.

Meeting CLIL criteria

When selecting, adapting or creating CLIL materials, it is necessary to adopt some criteria. High-quality CLIL materials are cognitively demanding and challenging for learners because they need to master the subject matter in L2 and L1. This “excessive cognitive load can be avoided by incorporating enhanced scaffolding and other learner support mechanisms to help students reach well beyond what they could do on their own. Quality learning materials help students build a sense of security in experimenting with language, content, and the management of their own learning. In addition, quality CLIL materials are highly integrative and multilayered and they help increase the likelihood that both content and language learning will be meaningful” (Mehisto, 2012, p. 17).

Mehisto (2012) suggests that quality CLIL materials should satisfy the following criteria:

- make the learning intentions (language, content, learning skills) & process visible to students;
- systematically foster academic language proficiency;
- foster learning skills development and learner autonomy;
- include self, peer and other types of formative assessment;
- help create a safe learning environment;
- fostering cooperative learning;
- seek ways of incorporating authentic language and authentic language use;
- foster critical thinking;
- foster cognitive fluency through scaffolding of a) content, b) language, c) learning skills development helping student to reach well beyond what they could do on their own;
- help to make learning meaningful.

More information concerning the criteria for creating CLIL-specific materials is available on the CLIL Cascade Network which also includes some CLIL materials and gives teachers an opportunity to share materials they have created.

Language requirements in CLIL classes

In CLIL, the development of cognitive skills is one of the objectives and “core elements of CLIL, i.e. tasks, output, and scaffolding have to be balanced in such a way that various cognitive activities are triggered” (Meyer, 2010, p. 21). In other words they have to enable the development of lower- and higher-order thinking skills of the learner. This development is hardly possible without the development of learners’ L1 and L2 language skills. As H. Vollme (2008, p. 273) points out “every learning involves language learning or is language learning at the same time ..., therefore, is of overriding importance also in subject learning.” From this it follows that language development is essential for the whole curriculum process.

In order to be able to access the new content, learners need to acquire the language of learning and the language for learning (Coyle, Hood & Marsh, 2010, p. 36-38, 59-63), i.e. the language they need to understand and talk about the new content, and the language they need to accomplish the tasks assigned by the teacher. “In CLIL, priority is given to satisfying the
demands of the curriculum of the content subject. Yet language is needed to transmit the concepts of the content and to enable the exchange of thoughts and ideas between teachers and students and among students” (Hönig, 2010, p. 33). It is necessary to realize that we are not talking about everyday English but about academic language students need to master to talk about subject-specific topics. They need to learn how to use a variety of language functions to be able to define, compare, classify, analyse, describe, draw conclusions, evaluate, hypothesize, predict, give information, explain, etc., which also helps them develop their cognitive skills. Of course, this language is new to them (in both L1 and L2), and they need to be scaffolded to use it.

When selecting, adapting or creating CLIL materials, one needs to keep in mind that students need to use language to gain and/or display their knowledge and understanding of the subject matter. Therefore, it is essential to think about how students will gain the needed information independently from the teacher, and how they might be given opportunities to interact with each other and be able to use the target language in meaningful tasks.

From the point of view of learner’s language development, whole-class interaction controlled by teacher’s questions is not sufficient because students’ answers are usually very short, known in advance and as such do not make it possible to personalize language, and do not contribute to language development. The nature of the input, the task as well as the output decides whether learners will construct their own knowledge, acquire the target language in meaningful tasks and in the interaction with each other gain language skills.

In CLIL teachers need to meet the requirements set by the integration of the content and language because CLIL is “an approach which is content-oriented but at the same time language-sensitive” (Wolff, 2005, p. 17). During the learning process students need to gain language skills which enable them “to fill the gap between what they might want to say (content competence) and what they are able to say in the foreign language (language competence)” (Bach, 2000, in Hönig, p. 39). In teacher-led lessons bridging this gap is not a problem because all students are asked to do is to answer teacher’s display questions. However, if students are required to construct their own knowledge using various materials in the foreign language, the gap becomes much wider and scaffolding becomes a must.

Language work in which CLIL students are involved in should include receptive processing of various texts, which emphasizes the process of understanding concepts used in various materials and exploiting them for the information they include. On the other hand, students must also have as many opportunities as possible to use the language they need to speak about the subject matter in English so that they master the functional academic language.

When preparing CLIL materials, teachers need to think carefully about activities students will do before processing the chosen material (pre-reading or pre-listening activities), tasks they will do while working with the text (during-reading or during-listening activities in which students gain new information and develop their receptive skills and reading literacy), and finally tasks which they will do after reading or listening activities and which will make it possible for them to develop higher-order thinking skills and productive language skills (speaking and writing). This procedure needs to be followed with all materials regardless of whether they are used in L1 or in L2.

**Designing CLIL learning materials**

When talking about learning or teaching materials, researchers usually refer to various texts and tasks or anything that helps students learn (Tomlinson, 2011, p. ix). They include information and knowledge which may be presented in various ways and help learners achieve the intended learning outcomes. “Quality learning materials do more than just communicate information. They promote critical and creative thought, discussion and learner autonomy. At the same time, quality learning materials help students recognise the limitations of their current thinking and learning. They help students to understand when they need additional information and help. They also promote mutual understanding in social situations in order to contribute to joint problem-solving” (Mehisto, 2012, p. 16).
Since there is a lack of CLIL materials, CLIL teachers need to select CLIL materials from the existing resources, adapt them so that they meet the needs of their students or they must actually become materials designers and create materials themselves. These are considered to be important competences of CLIL teachers.

**Varied input**

When selecting materials, it is necessary to evaluate them first from the point of view of the content and age appropriacy. It is necessary to make sure that the materials cover the content which is included in the curriculum, and have been designed for the same age group. The input provided by the materials should be as rich and varied as possible to accommodate various learning styles, and help students develop their language skills. It should include not only reading texts, but also radio broadcasts, various materials from the internet, such as youtube videos, films, internet articles, podcasts, powerpoint presentations, blogs, visuals, etc. They are authentic and up-to-date, and therefore attractive for both the students and the teachers.

According to Fürstenberg and Kletzenbauer (2012), another advantage of these materials is that the teachers who feel insecure about their English consider them as a good way of providing students with ‘authentic’ and ‘correct’ language. Moreover, thanks to them students are exposed to a variety of accents, rates of speech and expressions, which supports them in assimilating the content and the language better.

**Adjusting the materials**

When selecting materials for CLIL lessons, the teacher needs to decide, which of them will be offered in L1 and L2. We would like to stress that translation or doing the same tasks in both languages are not desirable. Regardless of the language, the activities should follow one another sequentially.

Learners need to learn gradually how to deal with text complexity so that they become proficient readers. The development of reading literacy does not only concern language teachers – on the contrary it applies to all content areas, and subject teachers are also responsible for the development of students’ comprehension skills and their reading literacy.

Most materials which can be found on the internet have been written for native speakers and therefore, often need to be simplified for CLIL learners. However, they should not be simplified too much and the difficulty needs to be dialled up gradually because students need to know that they are learning something new and making progress both from the content and language point of view. If students are taught skills and learning strategies such as questioning, making inferences, paraphrasing, tracing an argument, they are able to deal with quite demanding texts and gradually become independent readers.

After a material has been chosen, the teacher needs to decide about its purpose, clarity, demands it puts on the background knowledge of the students, and language difficulty. Each material which is used in a lesson needs to have a purpose. The teacher must know exactly what objectives it enables students to achieve, and whether it is possible to write tasks which go with it and make it possible for students to develop their higher-order thinking skills.

When considering the clarity of the text, we need to think about its organization and check if it will be easy for students to trace the thoughts expressed in it. To make it easier for students to comprehend the text, one can use completed graphic organizers, e.g. outlines, labelled diagrams showing procedures, problem and solution maps, Venn diagrams, concept definition maps, word clusters maps, cause and effects maps etc. Graphic organizers help learners understand the organization of the text and its main ideas before starting listening to or reading the text. There are many examples [here](#).

The understanding of the text also depends on the background knowledge which learners have. This includes their knowledge of the world, but also their knowledge of various genres of texts. Therefore, before they begin working with a text, it might be useful to activate students’ schemata (background knowledge) and give them some space to discuss their pre-concepts in pre-reading or pre-listening activities.
The next step is the analysis of the language level of the material. If it is too difficult from the language point of view, it is necessary to simplify it. In written texts, it is possible to

- shorten sentences and use simple language structures; for levels A1, A2 it is necessary to avoid using complex sentences if they are not part of the language structure students need to use to do the task, e.g. if they are expected to hypothesise in one of the after-reading activities, keep these structures in the text;
- replace high-level general vocabulary (ask a language teacher for help);
- avoid idiomatic expressions and phrasal verbs.

In addition to that, the teacher can also simplify the text by

- breaking it into short sections and using bullets;
- highlighting key words;
- writing notes (headings) on the margin.

Another aspect to consider is the identification of the learning skills students might need to deal with the material; e.g. scanning, writing a laboratory report, searching for some information on the Internet; etc. Materials chosen for a module should cover all language skills and make it possible for students to develop both receptive and productive skills. If this requirement is not met, the teacher should think about how easy or difficult it is to create tasks which will enable students to practise the skills.

**Stages of the learning process**

After the material has been chosen, the teacher needs to decide what tasks students will do with it and how they will be scaffolded in the learning process. Usually, the tasks are divided into three groups:

a) pre-reading/listening tasks which prepare students to deal with the material independently; motivate them and spark their interest; activate their schemata (pre-concepts); or help them understand some key vocabulary which appears in the material;

b) during-reading/listening tasks which help students understand the new knowledge, main ideas, important details, or specific information included in the text;

c) after-reading/listening tasks which enable students to use the new language of learning (subject-specific language) and language for learning, construct their own knowledge, deepen their understanding of the new subject matter, and use it in various problem-solving tasks.

When choosing tasks, it is essential to ask not only display questions to which the answers are known in advance, but also referential questions which enable divergent answers and encourage students to solve various problems. It is important that the development of lower- and higher-order thinking skills is balanced.

Ideally students should know which activities are compulsory and must be done by everyone, but they should also be given an opportunity to choose which other activities they will do. A variety of activities and the choice cater for the needs of learners with various learning styles and make the learner differentiation possible. Moreover, this also encourages students to think about their own learning, the objectives they want to achieve, their strengths and weaknesses, and it also makes them assess their own learning.

**Pre-listening/reading activities**

One of the objectives of the activities students do before listening to or reading a text is to find out what their pre-concepts are or to activate their schemata. There are lots of activities which make this possible, and they can all be done either in L1 or L2. One of them is the True/False activity. Students are given some statements and they need to decide if they are true or false. They are encouraged to discuss them in pairs.
For example, before students read a text about why we have days and nights, they might be asked to do the following task:

<table>
<thead>
<tr>
<th>Before reading</th>
<th>Statements</th>
<th>After reading</th>
</tr>
</thead>
<tbody>
<tr>
<td>T/F</td>
<td>The Sun does not move.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>We have day and night because the Earth spins.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>It is night-time when the Sun goes behind the clouds.</td>
<td></td>
</tr>
</tbody>
</table>

Another example is a KWL chart. In pairs students think about what objects they can see in the night sky and what they know about them, and make a list of their ideas in the first column. This is then discussed with the whole class. The teacher writes the ideas on the board but does not correct any misconceptions. Afterwards students are asked to think about what else they would like to learn about the objects, i.e. they ask questions about the new topic. This activity helps students learn how to plan their own learning objectives. Again, all the ideas are written on the board so that students know about each other's thinking. The third column may be filled in at the end of the lesson or after they have finished the module:

**PW:** First, think about what you can see in the sky and what you know about the objects and write it down in the first column.

Then write down in the second column what else you would like to learn about the objects you can see in the night sky.

<table>
<thead>
<tr>
<th>What I know</th>
<th>What I want to learn</th>
<th>What I have learned</th>
</tr>
</thead>
</table>

To find out what pre-concepts students come with, they may also be given a graphic organizer (e.g. a Venn diagram) which is partly filled in or empty. Students’ task is to write down all that they know about the topic. For example, they might be asked to compare planets and moons and write down what they have in common and how they are different. Afterwards they read a text or watch a video to confirm their ideas.

Asking students to predict what the text is going to be about is another strategy which develops learners' skills and scaffolds their learning. Students may be asked to use pictures, illustrations, charts, headings, highlighted words, or some sentences chosen from the text to predict what the content of the text. They may also be asked to read the title of the text and the first paragraph and make prediction on the basis of the information included there.

Another example of a preparatory activity is pre-teaching some vocabulary. Students first listen to the new key expressions and repeat them. Then they are asked to read definitions of some of the words and decide which of the words they stand for.

In order to find out what students' pre-concepts are and to activate their vocabulary, they might also be asked to describe a picture or to label it, e.g. the picture of solar system or the globe.
During-listening/reading activities

During-listening or during-reading activities include tasks which students need to do while they read or listen to a text. In these tasks they usually need to transform the information from one code to another using various graphic organizers, problem solving tasks, or answering various kinds of questions.

It is important that the task is set before listening or reading because it gives students the purpose for reading/listening and helps them focus on the most relevant aspects of the material:

1) Questions about the meaning of the text. Learners listen to or read a text and answer questions concerning it.
2) Multiple matching
   a) Students match descriptions to pictures, e.g. descriptions of objects they can see in the sky with their images.
   b) Students listen to or read several texts and match statements they can read in the task to the text(s). E.g. they listen to three texts about stars, planets and moons and match the statements to the texts.
   c) Learners match headings to paragraphs.
   d) Learners match questions and answers.
3) Completing notes or graphic organizers: Learners read/listen to a text and have to complete notes in a table, scheme or chart. This task is very similar to real-life tasks and therefore authentic. Examples of graphic organizers are here and here.
4) True/False statements: on the basis of the text, students need to decide if the statements are true or false. They should also be encouraged to underline the evidence for their decisions in the text.
5) Editing: Students are asked to find factual differences between two texts. They may be asked to listen to a text or watch a video and afterwards read its summary and find differences between the recording/video and a text the learners can read.
6) Sequencing: This task is very good for teaching various procedures. Students are asked to put parts of a text or pictures in the correct order. They can first do it before they read a text and in this way they activate their schemata. Afterwards they check their answers while reading the text.
7) Marking the text: Ask students to read the text and while reading it ask them to tick off (√) those pieces of information which are known to them, and write down a plus (+) next to those parts of the text which include new information. More mature readers can also be asked to write down a minus (-) next to those parts of the text which they do not understand or find confusing, and/or a question mark (?) next to those parts of the text where they would like to gain more information. This way of
reading makes learners focus on the meaning of the text. After they have done the task, they discuss what they have marked with their peers first. The new information, as well as problems and missing information, can also be discussed with the whole class.

8) Strategy 3 – 2 – 1 (https://www.readingquest.org/strat/321.html): students are asked to read a text and write down three things they have found out, two interesting things and one question they still have. This activity can easily be modified depending on the character of the texts, and students might be asked to write down three similarities, two differences and one question.

It is important that students read texts silently and after they have decided about their answers they should discuss them with their peers. In the discussion they clarify various problems and misunderstandings, learn from each other and construct their own knowledge. If they listen to a text or watch a video, they should be allowed to listen to it twice and discuss their answers both after the first and second listening.

After-listening/reading activities

After students have discussed the meaning of the text and checked its understanding, they might exploit it for its vocabulary. At this stage, it is necessary to draw students’ attention to the target vocabulary which in CLIL situation usually includes language of learning (terminology and the language needed to discuss the new subject matter). This can be done using a variety of vocabulary learning activities. More information here (p. 39-44). Many inspirational materials can also be found on a page of Smart Exchange where there are lots of IWB lessons, or one can choose from a variety of vocabulary activities offered on the Internet.

In the process of vocabulary learning, students need to become familiar with vocabulary learning strategies. Some of them are mentioned here.

It is necessary to keep in mind that at the after-reading stage students should be given a chance to use the new vocabulary in some meaningful activities. For example, after they have read and discussed texts about various sky objects, they might be asked to compare them in pairs:

Check your learning: Complete the table. If you want to find more information, use the internet.

<table>
<thead>
<tr>
<th></th>
<th>Stars</th>
<th>Comets</th>
<th>Man-made objects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Made of</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In orbit around</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Familiar object</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Light</td>
<td>reflect</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

GW/3: Using the table, compare the objects that you can see in the sky. Make at least five sentences.

Examples:

Stars are made up of …., but planets ................... .
Planets orbit stars, while moons ................... .

(Reynold, 2013, p. 55)
Students need to be scaffolded if we want them to do such tasks because some of them might not know the language structures they need to use to be able to carry out the task. In the task above, they have to compare the objects, therefore they are offered some language of comparison which they can imitate when doing the task. In this way we make sure that everyone is able to do the task and everyone will succeed. Of course, strong learners can also use other structures, not just those which are offered to them. These tasks are done in pairs or in small groups so that as many students as possible have a chance to use the language.

Scaffolding may also be done in other ways:

a) asking questions which students can use in their answers; e.g. Mathematic (word problems):
   A television and a computer that we want to buy cost a total of €1,208. The computer costs €559. How much does the television cost?

b) Presenting sentence stems students can use in their answers; e.g. passives used to describe scientific processes: Minerals are made from ..... and are used for ..... .

Students can also be scaffolded when they need to use vocabulary. For example, if they are asked to label a picture they might be allowed to decide if they want to have a wordlist to choose from or not. Of course, the wordlist helps learners to be more successful than they would be if they did not have it.

In other tasks one can use various manipulatives (objects) which reach visual, kinesthetic and tactile learners and help them develop their cognition, reasoning, critical thinking, and interpersonal and intrapersonal intelligences. They give students a hands-on experience which shapes their thinking and learning.

On the Internet it is also possible to find many games which promote learners’ thinking skills, e.g. here and here. They are very useful because they support learners’ independent thinking and enable multidirectional communication. In this way learners are prompted to learn from each other not just from the teacher.

Language scaffolding is often needed if we want students to work in small groups in which they have to use language for learning. For example, if students need to express their opinion, it is necessary to give them some expressions they might use to do it:

### Expressing opinion

- In my opinion...
- I believe that...
- I guess....

In groups they often need to ask for clarification; therefore, it might be useful for them to give them the following phrases:

### Clarification of meaning

- What do you mean?
- Say it again please.
- I don’t really understand (what you mean).
- What does orbit mean?

In this way students acquire the language they need to be able to operate in a foreign language environment while working in groups.

After listening/reading tasks also include various problem solving tasks, discussions, role-plays, inquiry activities, written assignments, etc. in which students use the language to express
their own ideas; not just repeat what they have read or heard in a text or from the teacher. These tasks develop students’ higher-order thinking skills, such as evaluation, creation or analytical thinking. Because some of these tasks may be too difficult for some learners, it might be a good idea to prepare several of them and ask students to choose which of them they want to do. In this way learners are differentiated, and their learning needs are taken into consideration:

Choose which of these questions you are going to answer. Do at least two:

1) Find out the number of the moons orbiting the planets in the Solar System.
2) Explain why we can see the Moon.
3) Why are Uranus and Neptune not called ‘naked-eye’ planets?
4) How do we use GPS?

(Reynold, 2013, p. 53)

In addition to the tasks mentioned above, the Internet offers many reading strategies which include two or all three of the stages (pre-, during- and after-reading tasks). Even though they are usually referred to as reading strategies, they can easily be adapted for listening texts as well, and can be used with any of the material which we have at our disposal.

Among the best known strategies are

- **SQ3R:** Survey, Question, Read, Recite, and Review;
- **PLAN:** Predict, Locate, Add, and Note;
- **KWHL:** (here and here);
- **RAP:** Read, Ask, Paraphrase;
- **REAP:** Read, Encode, Annotate, Ponder (here and here);
- **Critical Reading.**
  
  Many more strategies can also be found here or here.

To sum up, CLIL is based on constructivist principles, therefore it uses learner-oriented methods to enable students to construct their own knowledge and thus achieve the objectives. Learning materials should enable the development of all main components of CLIL – content, cognition, communication and culture – following some specific criteria. During the learning process students should activate their schemata, discuss their pre-concepts, gain information from a variety of sources, be involved in tasks in which they can investigate, observe, make conclusions, compare, analyse, evaluate, etc. All these activities need to be carried out so that they give students an opportunity to acquire not only subject knowledge, but also cognitive and interactional skills.

References


